

ABSTRACT

In an intake passage (1) of an internal combustion engine (8), a compressor (4) combined with an electric motor/generator (4a) is provided. A bypass valve (6) connecting upstream and downstream portions of the intake passage (1) to bypass the compressor (4) is further provided. When a required intake air flow rate of the engine (8) is smaller than a threshold value, the engine (8) operates by natural aspiration of intake air and the electric motor/generator (4a) generate electric power by using rotational energy of the compressor (4) which rotates due to the flow of intake air. By increasing the opening of the bypass valve (6) as the required intake air flow rate diverges from the discharge flow rate of the compressor (4) the intake air flow rate is accurately controlled while satisfying the power generation requirement.